REMARKS

Applicants respectfully request reconsideration of this application. Claims 15-27, 32-36, 38-44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent number 5,793,512 by Ryu, ("Ryu") in view of U.S. patent number 4,563,087 by Bourbin ("Bourbin"). Claims 28-31, 37, and 42-56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ryu in view of Bourbin and U.S. Patent number 6,650,840 by Feldman ("Feldman").

No claims have been canceled, added or amended.

The Examiner has rejected claims 15-27, 32-36, 38-44 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Ryu with Bourbin. The Examiner states:

> Ryu disclosed injecting a laser device (e.g., col./line: 5/25-35) but does not disclose externally injecting a narrow-band incoherent light signal into a light source capable of lasing. . . . Bourbin disclose[s that] incoherent light is injected into a fiber. It would have been obvious to one of ordinary skill in the art at the time of invention to use the incoherent light as an injection source in the [Ryu invention] since incoherent light is a much more readily [available] source of light than coherent light.

(Office Action page 2) (emphasis added)

However, applicants respectfully assert that independent claim 15 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu.

Claim 15 states:

> 15. A method, comprising:
> externally injecting a narrow-band incoherent light signal into a light source capable of lasing;
> suppressing the lasing modes outside of a bandwidth of the injected incoherent light signal by injecting the narrow-band incoherent light signal; and

locking an output wavelength of the light source capable of lasing within the bandwidth of the injected incoherent light.

(emphasis added)

As acknowledged above by the Examiner, Ryu has nothing to with injecting an incoherent light signal into a light source capable of lasing and locking an output wavelength of the light source within the bandwidth of the injected incoherent light. Moreover, applicants assert that Ryu merely teaches and suggests injecting a coherent light signal into a laser to remove intensity modulations due to noise. Ryu discloses:

> The present invention relates to an optical communication system, of which a trunk line comprises an optical transmission fiber. This is particularly suitable for a coherent optical transmission system. (Ryu Col. 1, Lns. 5-9) (emphasis added)
>
> In the coherent optical transmission with Frequency Shift Keying or Phase Shift Keying, the amplitude of the optical signal is constant and not easily affected by the nonlinear optical effect. However, if intensity noise is generated by addition of noise, the intensity noise is converted to the phase noise as described above. (Ryu Col. 2, Lns. 4-9) (emphasis added)
>
> Recently, an optical communication system called the coherent optical transmission system to modulate a light by the frequency-shift keying (FSK) or phase-shift keying (PSK) is disclosed. (Ryu Col. 1, Lns. 10-14) (emphasis added)
>
> Describing further detail, modulation applied to the optical signal output from the optical transmitter 1 is frequency modulation or phase modulation which keeps the intensity of the optical signal principally unchanged. (Ryu Col. 5, Lns. 16-21) (emphasis added)
>
> Since the injection-locked laser device 5 has the function to eliminate the intensity modulation component only, the remaining frequency modulated or phase modulated signal component of the transmission light is unchanged. Accordingly, the output of the injection-locked laser device 5 does not contain the intensity modulation component improving the signal-to-noise ratio. (Ryu Col. 5, Lns. 28-35) (emphasis added)

> In this way, inserting the injection-locked laser device 5 on the optical transmission fiber 2 allows the intensity noise component generated during transmission suppressed, providing excellent transmission to be characteristics and long-haul transmission. (Ryu Col. 5, Lns. 40-44) (emphasis added)

Ryu even claims that the disclosed invention is for injecting a coherent light signal into a laser to remove intensity modulations due to noise. Ryu further discloses:

> 1. An optical communication system for coherent optical transmission comprising:
> an optical transmitter for transmitting a coherent optical signal connected to one end of an optical transmission fiber;
> . . .
> an optical amplifier for amplifying the coherent optical signal inserted in the optical transmission fiber;
> an injection-locked laser device for alleviating the intensity noise of the coherent optical signal inserted in the optical transmission fiber;
> said injection-locked laser device comprising;
> . . .
> a semiconductor laser for alleviating the intensity noise of the coherent optical signal by regenerating according to the coherent optical signal sent from the second optical connector.
> (Ryu Col. 11, Lns. 24-50) (emphasis added)

Thus, Ryu teaches and emphasizes to *only* remove intensity modulation by injecting a coherent light signal into a laser. The coherent light signal has the intensity modulation of that signal due to noise being removed. Therefore, Ryu does not teach or suggest injecting an incoherent light signal into a light source capable of lasing. Moreover, Ryu does not teach or suggest locking an output wavelength of the light source to within the bandwidth of the injected incoherent light.

Similarly, the Examiner states that "Bourbin disclose[s that] incoherent light is injected into a fiber." However Bourbin does not teach or suggest

anything to do with injecting an incoherent light signal into a light source capable of lasing and locking an output wavelength of the light source within the bandwidth of the injected incoherent light. Bourbin discloses measuring characteristics of an optical fibre. Bourbin is titled, "Process and device for simultaneously measuring the geometrical characteristics of an optical fibre." Bourbin teaches that a main purpose of the disclosed invention is to provide "The invention relates to a process and device for measuring the optical core - mechanical sheath concentricity and the optical core ellipticity of an optical fibre." (Bourbin Abstract Paragraph) Thus, the Bourbin invention is completely salient about and has nothing to do with locking an output wavelength of the light source within the bandwidth of the injected incoherent light. Bourbin merely discloses that an incoherent light signal is used to perform a rotary movement measurement around a circle i.e. core diameter of a fibre. (Bourbin Col. 4, Lns. 5-25). Bourbin does not teach or suggest "injecting an incoherent light signal into a light source capable of lasing" and "locking an output wavelength of the light source within the bandwidth of the injected incoherent light."

In addition, Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Neither Bourbin nor Ryu contains any wording that teaches or suggests anything about that incoherent light is a much more readily [available] source of light than coherent light." First, the applicants assert as in the previous Response that the motivation to combine the references must be found within the references themselves or 2) if the Examiner makes a proper evidentiary finding of facts. (See the previous response for a detailed discussion) The applicants assert that the present 103 combination fails to

meet these requirements. However, applicants also traverse the Examiner's overall conclusion that one skilled in the art would read a patent on using an incoherent light signal to perform a rotary movement measurement in a fibre and make a nexus that I could inject an incoherent light signal into a laser and then lock that laser to within the bandwidth of the injected incoherent light. Therefore, Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103.

Moreover, even if both references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "injecting an incoherent light signal into a light source capable of lasing" and "locking an output wavelength of the light source within the bandwidth of the injected incoherent light."

Therefore, in view of the above distinction, neither Ryu nor Bourbin, individually or in combination, disclose each and every limitation of claim 15. As such, claim 15 is not rendered obvious by Bourbin in view of Ryu under 35 U.S.C. § 103(a).

Given that claims 16-21 depend from and include the limitations of claim 15, applicants submit that claims 16-21 are not obvious in view of Bourbin and Ryu.

Applicants traverse the Examiner's assertions about claim 21. However, claim 21 depends upon independent claim 15, which applicants assert is allowable making an argument about claim 21 moot at this time.

Likewise, independent claim 22 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu. As discussed above, Bourbin and Ryu references may not be properly combined under 35 U.S.C. §

103. Moreover, even if both references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "injecting an incoherent light signal into a light source capable of lasing" and "locking an output wavelength of the light source within the bandwidth of the injected incoherent light."

Given that claims 23-27 depend from and include the limitations of claim 22, applicants submit that claims 23-27 are not obvious in view of Bourbin and Ryu.

Applicants also traverse the Examiner's assertion that it would be obvious at the time the invention was filed using Fabry-Perot laser diodes is obvious because they are the most common type of laser. Applicants respectfully request documentary evidence to support the Examiner's assertion per the PTO guidelines.

Applicants also traverse the Examiner's assertion that it would be obvious at the time to use combine the limitations forming claims 18 and 25 just because a super luminescent diode transmits a broad spectrum of light. Applicants respectfully request documentary evidence to support the Examiner's assertion and some nexus reasoning.

Likewise, applicants assert independent claim 32 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu. Neither reference even discusses Fabry-Perot laser diodes. Also, as discussed above, Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if both references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "an optical power splitter coupled to the optical filter and the Fabry-Perot laser

diode to route the narrow-band incoherent light to the Fabry-Perot laser diode to cause the Fabry-Perot laser diode to emit a wavelength-selective output that is locked by the narrow-band incoherent light."

Given that claims 33-34 depend from and include the limitations of claim 32, applicants submit that claims 33-34 are not obvious in view of Bourbin and Ryu.

Likewise, independent claim 35 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu. Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if both references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "each coherent light source capable of lasing to emit an output signal at a wavelength different from the other coherent light sources and each output signal is locked by an injected spectrally-sliced narrow-band incoherent light signal."

Given that claims 36-41 depend from and include the limitations of claim 35, applicants submit that claims 36-41 are not obvious in view of Bourbin and Ryu.

Likewise, independent claim 42 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu. Neither reference even discusses Fabry-Perot laser diodes. Also, the Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if both references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "wherein each Fabry-Perot laser diode of the plurality of Fabry-Perot laser diodes emits a wavelength-selective output locked by an injected narrow-band incoherent light."

Given that claims 43-44 depend from and include the limitations of claim 42, applicants submit that claims 43-44 are not obvious in view of Bourbin and Ryu.

The Examiner has rejected claims 28-31 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Ryu with Bourbin and Feldman. The Examiner states:

> Ryu disclosed injecting a laser device (e.g., col./line: 5/25-35) but does not disclose externally injecting a narrow-band incoherent light signal into a light source capable of lasing. . . . Bourbin disclose[s that] LEDs could be used as a source (1 of Figure 2 in Ryu) for a mode-locked laser. It would have been obvious to one of ordinary skill in the art at the time of invention to use the LED as injection source in the Ryu invention in order to gain inexpensive wavelength source since LEDs are known to be cheaper than lasers.
> Feldman disclose[s] an optical circulator between the incoherent and coherent light source.

(Office Action page 4) (emphasis added)

However, applicants respectfully assert that independent claim 28 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman. First, applicants traverse the Examiner's assertion that Bourbin discloses that an LED can be used as a source of light. Applicants assert that Bourbin does not even contain the term "Light Emitting Diode" or "LED." Naturally, applicants did not find that Bourbin discloses that "LEDs could be used as a source . . . for a mode-locked laser."

Next, for the reasons discussed above previously, Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. In addition, the Examiner's reasoning to combine the references for claims 28-31 is based on Bourbin disclosing LED as a light source and Bourbin does not do this. Moreover, even if both references were properly combined under 35

U.S.C. § 103, the combination would lack the limitations of "the optical circulator routes a spectral slice of the incoherent light to the coherent light source capable of lasing, wherein the coherent light source capable of lasing emits a wavelength-selective output locked by the spectrally sliced incoherent light." Feldman's disclosure of an optical circulator in a branched optical network that uses a method to identify optical faults does not make up for the shortcomings of the Bourbin and Ryu combination under 35 U.S.C. § 103.

Feldman is titled, a "Method for identifying faults in a branched optical network." Feldman teaches that a main purpose of the disclosed invention is to solve "a continuing need for methods that facilitate fault identification in optical networks and in particular, branched optical networks," and that "the principles of my invention [are] directed to a method for identifying faults in a branched optical network." (Feldman Col. 2, Lns. 13-21). However, Feldman is completely silent regarding "routing incoherent light to the coherent light source capable of lasing and the coherent light source capable of lasing emitting a wavelength-selective output locked by the spectrally sliced incoherent light. If a reference does not discuss a claim limitation, then that reference cannot teach or suggest that limitation. In fact, the Examiner previously acknowledged that Feldman does not disclose a light source that emits a wave-length-selective output locked by the injected narrow band incoherent light. (12-17-04 Office Action, Page 6). Therefore, none of the references teach or suggest routing an incoherent light to a coherent light source capable of lasing and the coherent light source capable of lasing emitting a wavelength-selective output locked by the spectrally sliced incoherent light.

Therefore, in view of the above distinction, neither Ryu, Feldman, nor Bourbin, individually or in combination, disclose each and every limitation of claim 28. As such, independent claim 28 is not rendered obvious by Bourbin in view of Ryu and further in view of Feldman under 35 U.S.C. § 103(a).

Given that claims 29-31 depend from and include the limitations of claim 28, applicants submit that claims 29-31 are not obvious in view of Bourbin, Feldman, and Ryu.

The Examiner has rejected dependent claim 37 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Ryu with Bourbin and Feldman. The Examiner states that Feldman discloses an optical circulator between the incoherent and coherent light source. (Office Action page 5).

Claim 37 depends from and includes the limitations of claim 35. Applicants respectfully assert that independent claim 35 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman.

As discussed above, Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if both references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "an optical power splitter coupled to the optical filter and the Fabry-Perot laser diode to route the narrow-band incoherent light to the Fabry-Perot laser diode to cause the Fabry-Perot laser diode to emit a wavelength-selective output that is locked by the narrow-band incoherent light." Feldman's disclosure of an optical circulator in a branched optical network that uses a method to identify optical faults does not make up for the shortcomings of the Bourbin and Ryu combination under 35 U.S.C. § 103.

Therefore, in view of the above distinction, neither Ryu, Feldman, nor Bourbin, individually or in combination, disclose each and every limitation of claim 35. As such, independent claim 35 is not rendered obvious by Bourbin in view of Ryu and further in view of Feldman under 35 U.S.C. § 103(a). Accordingly, independent claim 35 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman. Given that claim 37 depends from and includes the limitations of claim 35, applicants submit that claim 37 is not obvious in view of Bourbin, Feldman, and Ryu.

The Examiner has rejected claims 42-56 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Ryu with Bourbin and Feldman.

However, applicants respectfully assert that independent claim 42 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman.

As discussed above, Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Even more so with the rejection of claims 42-56 because the Examiner's reasoning to combine relies on Bourbin disclosing an LED and Bourbin does not even contain the term "Light Emitting Diode" or "LED." (See Office Action pages 5 and 6) Moreover, even if both references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "each Fabry-Perot laser diode of the plurality of Fabry-Perot laser diodes emits a wavelength-selective output locked by an injected narrow-band incoherent light." Feldman's disclosure of an optical circulator in a branched optical network that uses a method to identify optical faults does not make up for the shortcomings of the Bourbin and Ryu combination under 35 U.S.C. § 103.

Therefore, in view of the above distinction, neither Ryu, Feldman, nor Bourbin, individually or in combination, disclose each and every limitation of claim 42. As such, independent claim 42 is not rendered obvious by Bourbin in view of Ryu and further in view of Feldman under 35 U.S.C. § 103(a).

Given that claims 43-44 depend from and include the limitations of claim 42, applicants submit that claims 43-44 are not obvious in view of Bourbin, Feldman, and Ryu.

Likewise, independent claim 50 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman. The Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if all three references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "each coherent light source capable of lasing emits a wavelength-selective output locked by the narrow-band incoherent lights."

Therefore, in view of the above distinction, neither Ryu, Feldman, nor Bourbin, individually or in combination, disclose each and every limitation of claim 50. As such, independent claim 50 is not rendered obvious by Bourbin in view of Ryu and further in view of Feldman under 35 U.S.C. § 103(a).

Given that claims 51-52 depend from and include the limitations of claim 50, applicants submit that claims 51-52 are not obvious in view of Bourbin, Feldman, and Ryu.

Likewise, independent claim 53 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman. The Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if all three references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "at least one Fabry-Perot laser diode that emits a wavelength-selective output locked by an injected narrow-band incoherent light."

Therefore, in view of the above distinction, neither Ryu, Feldman, nor Bourbin, individually or in combination, disclose each and every limitation of

claim 53. As such, independent claim 53 is not rendered obvious by Bourbin in view of Ryu and further in view of Feldman under 35 U.S.C. § 103(a).

Given that claims 54-55 depend from and include the limitations of claim 53, applicants submit that claims 54-55 are not obvious in view of Bourbin, Feldman, and Ryu.

Likewise, independent claim 56 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman. The Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if all three references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "a plurality of optical network units that include coherent light sources capable of lasing . . ., which emit a wavelength-selective output locked by the narrow-band incoherent lights."

Therefore, in view of the above distinction, neither Ryu, Feldman, nor Bourbin, individually or in combination, disclose each and every limitation of claim 56. As such, independent claim 56 is not rendered obvious by Bourbin in view of Ryu and further in view of Feldman under 35 U.S.C. § 103(a).

Independent claim 45 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Bourbin with Ryu and Feldman. The Bourbin and Ryu references may not be properly combined under 35 U.S.C. § 103. Moreover, even if all three references were properly combined under 35 U.S.C. § 103, the combination would lack the limitations of "a central office that includes an incoherent light source that generates a broadband incoherent light, a second demultiplexer, and a plurality of receivers that are coupled at the output ends of the second demultiplexer' and "a plurality of coherent light sources capable of lasing coupled to output ends of the first demultiplexer, wherein the first demultiplexer receives output signals from the plurality of coherent light sources capable of lasing to generate an upstream signal."

Therefore, in view of the above distinction, neither Ryu, Feldman, nor Bourbin, individually or in combination, disclose each and every limitation of

claim 45. As such, independent claim 45 is not rendered obvious by Bourbin in view of Ryu and further in view of Feldman under 35 U.S.C. § 103(a).

Given that claims 46-49 depend from and include the limitations of claim 45, applicants submit that claims 46-49 are not obvious in view of Bourbin, Feldman, and Ryu.

Conclusion

Applicants respectfully submit that the rejections and objections have been overcome. Applicants respectfully submit that claims 15-56 are in a condition for allowance. Applicants reserve all rights with respect to the application of the doctrine equivalents.

Respectfully submitted,
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